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Title : Abundance and trends of dolphins affected by the tuna purse-seine fishery in the eastern tropical Pacific Ocean

Category : Conservation

Student : Not Applicable

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Abstract : Stratified large-scale line-transect surveys were carried out with oceanographic research vessels in the eastern tropical Pacific Ocean in 12 different years between 1979 and 2000. The surveys were designed to estimate the abundance of the northeastern offshore stock of pantropical spotted dolphins (*Stenella attenuata attenuata*), the coastal subspecies of spotted dolphins (*S. a. graffmani*) and the eastern subspecies of spinner dolphins (*S. longirostris orientalis*). These are the dolphin populations most affected by the purse-seine tuna fishery for yellowfin tuna (*Thunnus albacares*) in the eastern Pacific. Aerial photography was used to measure dolphin school sizes when possible, and to improve observers' estimates of school size when not. Estimates of dolphin abundance for each stock were based on a modified line-transect analysis, using covariates to model the probability of detection. Current estimates of abundance are about 640,000 northeastern offshore spotted dolphins, 450,000 eastern spinner dolphins and 145,000 coastal spotted dolphins. Neither northeastern offshore spotted nor eastern spinner dolphins showed statistically significant linear or quadratic (curved) trends over time. A power analysis indicated that a rate of change of 3% or more per year would have been detected with high probability (> 0.95), 2% per year with moderate probability (0.67) and 1% per year with low probability (0.26). Trends in abundance agreed with indices of relative abundance from fisheries data better for eastern spinner dolphins than for northeastern offshore spotted dolphins. Neither population is recovering at a rate consistent with the low kill currently reported in the tuna purse-seine fishery.